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How to

Identify Red Pine Pocket Decline and Mortality

Red pine pocket decline and mortality is a recently discovered problem affecting plantation grown red pine in Wisconsin, Michigan and Illinois. This decline and mortality syndrome has been observed in 20–40 year old stands on a variety of soils.

A common symptom which may suggest red pine pocket decline and mortality is the presence of a large circular opening (pocket) within a stand. Dead trees and greatly increased growth of understory plants can be found in the center of the pocket. Trees towards the margin of the pocket may exhibit reduced diameter and height growth. The crowns of trees along the margin may be thin and chlorotic with scattered dead branches and may bear a heavy crop of cones. Trees further from the margin may appear healthy and vigorous in comparison. Over time, the pocket enlarges as mortality of trees continues.

Several species of insects and fungi are associated with this syndrome and may or may not be present within decline and mortality pockets.

The pine engraver may be found in declining and dead trees at the edge of the pocket. Signs and symptoms of pine engraver infestation on the main trunk includes the presence of emergence holes, loose bark, boring dust and galleries underneath the bark.

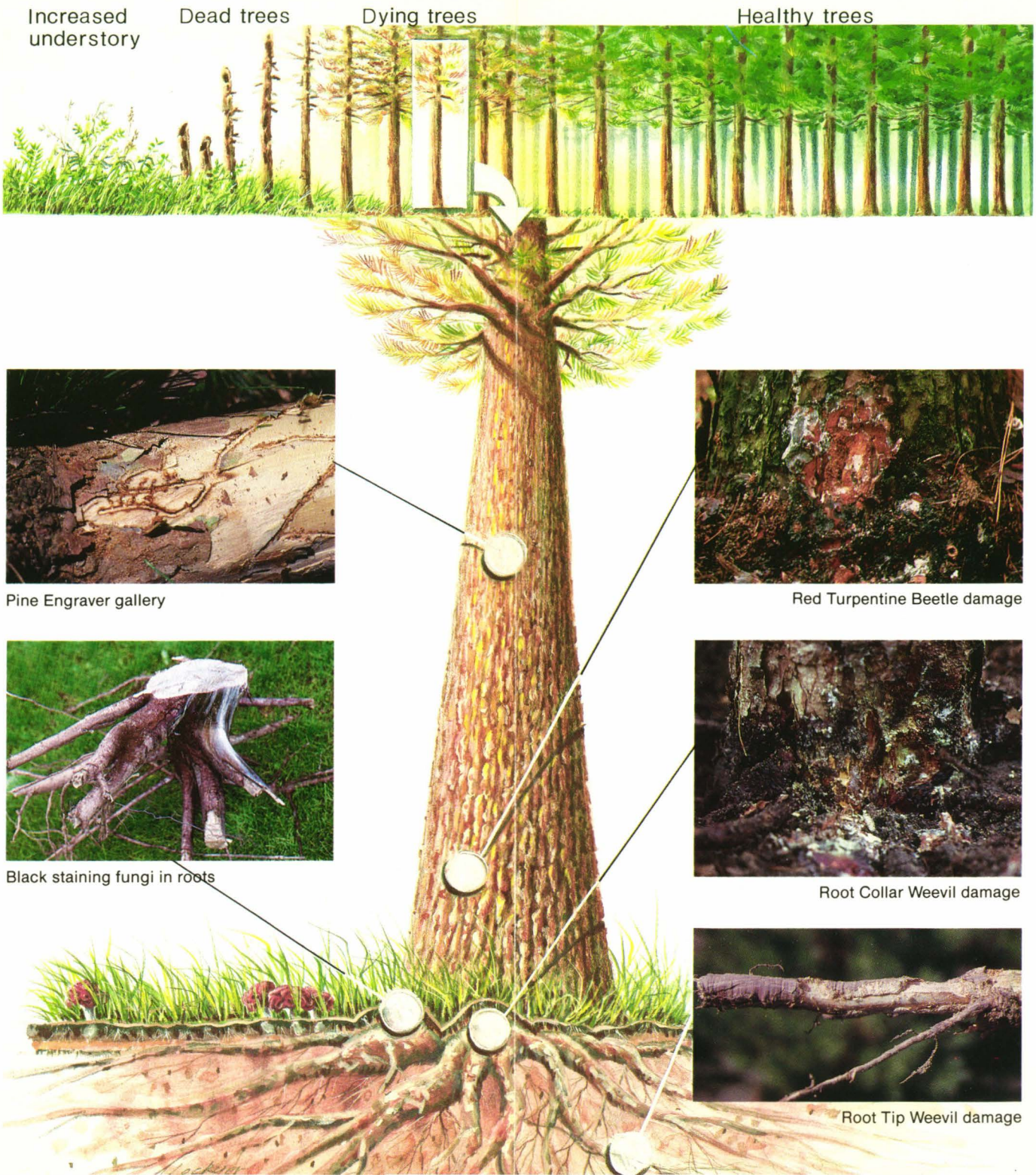
The red turpentine beetle may be present in the lower trunk of declining trees and apparently healthy trees. The beetle produces resinous pitch tubes on the lower three to four feet of the trunk.

The root collar weevil and/or damage associated with it may be found at the root collar and along the upper portion of large roots in declining trees and apparently healthy trees. Black pitchy soil and resinous larval galleries at the root collar are signs of root collar weevil activity.

In declining trees, the root tip weevil may also be present feeding and reproducing in and around the tips of small lateral roots. Although signs of feeding are difficult to detect, scattered dead branches in the crown of a tree are generally associated with root tip weevil feeding. The root tip weevil larva and adult are similar in appearance to the root collar weevil.

Species of fungi belonging to the genera *Leptographium* and *Ceratocystis* are associated with the insects found within pockets and are consistently isolated from the roots of declining red pines. Black stained roots are an indication of infection by these pathogens. The significance of these fungi in the syndrome is not known.

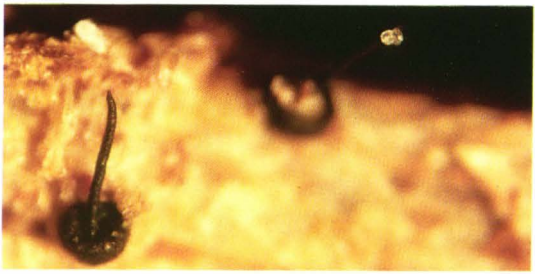
The cause of red pine pocket decline and mortality is not yet known. A study is currently underway at the University of Wisconsin-Madison to determine which factors are involved in this syndrome. At this time, there is no effective control known for this problem.


Increased understory
Dead trees
Dying trees
Healthy trees
Pine Engraver gallery
Red Turpentine Beetle damage
Black staining fungi in roots
Root Collar Weevil damage
Root Tip Weevil damage

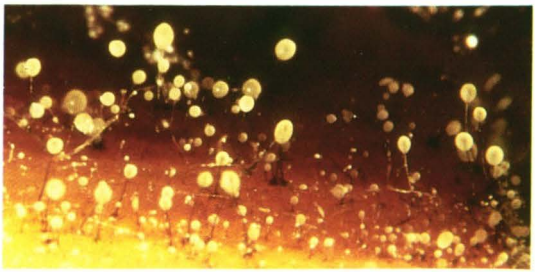
Pine Engraver – *Ips pini*

Red Turpentine Beetle – *Dendroctonus valens*

Root Collar Weevil – *Hylobius radicis*



Fruiting structures (Perithecia)
of *Ceratocystis spp.*



Fruiting structures (Coremia)
of *Leptographium spp.*

Red Pine Pocket Decline

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